FIG. 1A

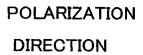




FIG. 1B

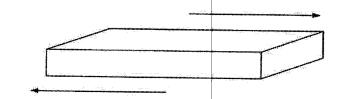


FIG. 2

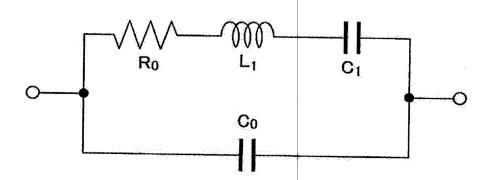


FIG. 3

ELECTRODE OVERLAPPING LENGTH

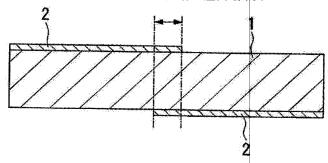


FIG. 4

SPECIMEN		ADDITIVE	Pb _a [(N	IAIN COI In _{1/3} NE (x+y+	COMPONEN $3Nb_2/3$ T $(x+y+z=1)$	MAIN COMPONENT $Pb_{\alpha}[(Mn_{1/3}Nb_{2/3})_{x}Ti_{y}Zr_{z}]O_{3}\\ (x+y+z=1)$	ELECTRIC PROPERTIES	MECHANICAL STRENGTH	HEAT RESISTING PROPERTIES	HEAT RESISTING AL- PROPERTIES CONTAINING
Š		SiO ₂		×	>		Q _{max}	σ_{b3}	AF ₀	PHASE
	(WT%)	(WT%)	(mol)	(mol)	(mol)	(lom)		(N/mm ²)	<u>%</u>	
,	0.1						120	155	0.11	×
2	0.3						135	172	0.07	0
3	0.5	0.02	0.99	0.10	0.53	0.37	136	179	0.08	0
4	0.7		Nitronia de la constanta de la				130	192	0.07	0
5	1.0	antiili					133	192	0.07	0
)

FIG. 5

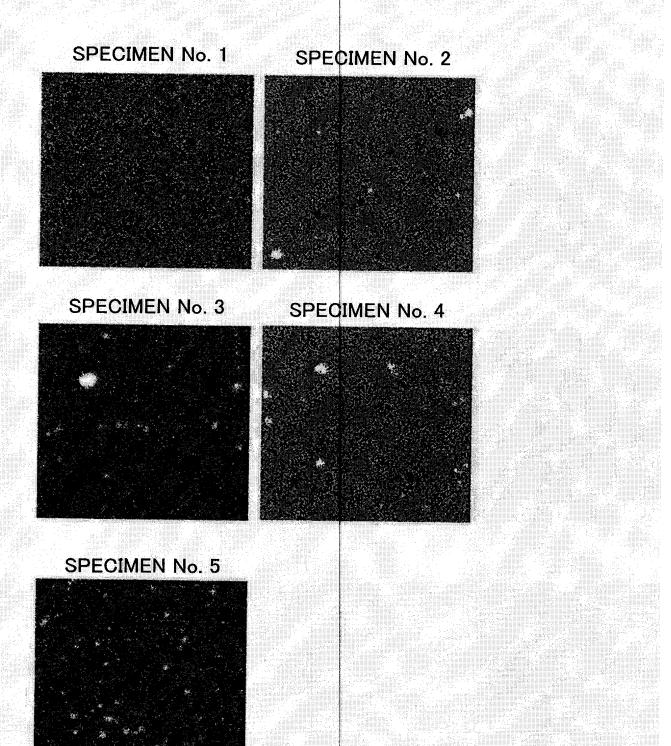


FIG. 6

$ \begin{array}{c c} \text{ADDITIVE(β)} & \text{MAIN COMPONENT} \\ \text{ADDITIVE(β)} & \text{Pb}_{\alpha} [(\text{Mn}_{1/3} \text{Nb}_{2/3})_{x} \text{Ti}_{y} \text{Zr}_{z}] \text{O}_{3} \\ \text{No.} & (x+y+z=1) \\ \text{No.} \end{array} $	ADDITI	VE(B)	ν)] ^ω 9α	MAIN CON (Mn _{1/3} Ni (x+y+	OMPONENT Nb _{2/3}) _x Ti _y Z +y+z=1)	۲۲ آپکت ^ا	ELECTRIC PROPERTIES	HEAT RESISTING PROPERTIES	TEMPEI	TEMPERATURE CHARACTERISTICS
	AI_2O_3 (wt%)	SiO ₂ (wt%)	α (mol)	× (lom)	y (mol)	z (mol)	Q _{max}		\DF ₀ (-40°C)	\DF ₀ (85°C)
9	0.01					1	135	3.9	0.18	0.08
7	0.02						125	3.0	0.16	0.05
8	0.10		0.998		0.51	0.39	128	2.9	0.21	0.10
6	0.50						145	1.9	0.27	0.14
10	1.00			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			110	3.0	0.33	0.19
-	0.10	12.0					121	2.3	0.09	0.05
12	0.30	000		Ç			135	2.3	0.04	0.03
13	0.50	0.02		0			136	2.4	0.04	0.07
14	0.70			idan,			121	2.3	0.03	0.10
15	1.00		0.66.0		0.53	0.37	133	2.2	0.04	0.07
16	1.50				***************************************	5	122	2.2	0.02	0.00
17	2.00			·			121	2.1	0.02	0.10
18	3.00			<u></u>			104	2.4	0.00	0.09
19	10.00					agraement of the second	73	2.8	0.01	0.13

FIG. 7

		•		MAIN COMPONENT			a case					
	ΔDD.	ITIVE			MPONEN I Nb _{2/3}) _x Ti _y Zr _z]		ELECTRIC	HEAT	TEMPF	RATURE		
SPECI-	ADD.	111VL			x+y+z=1)		PROPER	RESISTING		TERISTICS		
MEN No.	Al ₂ O ₃	SiO ₂		-	. , , ,	ř	TIES	PROPERTIES				
	(wt%)	(wt%)	α (mol)	x (mol)	y (===1)	Z	Q_{max}		ΔF ₀ (-40°C)	ΔF ₀ (85°C)		
20 *	(VVC/U)	.\.9V C/0.):	(11101)	0.02	(mol) 0.56	(mol)	- 00	(%)		V/1		
21				0.02	······	0.42	29	1.1	0.24	0.14		
22					0.58	0.38	81	0.9	0.11	0.14		
23			:	0.04	0.56	0.40	85	1.0	0.25	0.02		
24 *	,				0.55	0.41	117	1.4	0.29	0.09		
25					0.54	0.42	108	1,4	0.54	0.19		
B				0.06	0.56	0.38	95	1.1	0.09	0.04		
26 *		:			0.52	0.42	177	1.5	1.10	0.77		
27 *				0.08	0.59	0.33	98	1.5	0.28	0.41		
28					0.54	0.38	112	1.7	0.11	0.02		
29					0.55	0.36	114	1.8	0.03	0.19		
30				0.09	0.54	0.37	119	1.8	0.05	0.11		
31				0.00	0.53	0.38	124	1.5	0.13	0.03		
32			0.990		0.52	0.39	154	1.8	0.24	0.07		
33					0.58	0.32	81	1.7	0.23	0.30		
34	0.5	0.02			0.54	0.36	147	2.1	0.02	0.14		
35				0.10	0.53	0.37	146	1.8	0.05	0.06		
36					0.52	0.38	158	1.7	0.14	0.02		
37		:			0.51	0.39	183	1.6	0.25	0.13		
38					0.53	0.36	135	2.7	0.00	0.09		
39		:		0.11	0.52	0.37	127	1.9	0.07	0.00		
40			:	0.11	0.51	0.38	163	2.0	0.16	0.10		
41					0.50	0.39	170	2.0	0.27	0.22		
42					0.58	0.30	80	2.2	0.29	0.40		
43				0.12	0.56	0.32	98	2.3	0.20	0.28		
44					0.50	0.38	177	2.6	0.13	0.15		
45]			0.55	0.36	128	1.3	0.00	0.17		
46				00-	0.54	0.37	131	1.6	0.08	0.17		
47			0.995	0.09	0.53	0.38	129	1.2	0.14	0.08		
48				1	0.52	0.39	154	0.8	0.14	0.02		
					U,UZ.	0.00	104	0.0	0.20	U.IU		

FIG. 8

	~~	1	-	7	7	7	-						
TEMPERATURE CHARACTERISTICS	\(\Delta\) F ₀ (85°C)	0.25	0.23	0.07	0.30	0.17	0.09	0.12	0.17	0.15	0.13	0.04	0.13
TEMPEF CHARACT	\DF ₀ (-40°C)	0.40	0.35	0.12	0.15	0.03	0.05	0.25	0.30	0.25	0.15	0.09	0.16
HEAT RESISTING		2.2	2.0	2.7	2.8	1.9	1.6	2.9	2.7	2.2	4.5	4.7	4.2
MAIN COMPONENT ELECTRIC Pb $_{\alpha}[(Mn_{1/3}Nb_{2/3})_{x}Ti_{y}Zr_{z}]O_{3}$ PROPER-(x+v+z=1)	O _{max}	141	145	166	107	119	140	147	138	131	81	129	120
۱۲ آپکات _ا	z (mol)	0.39	0.39	0.39	0.36	0.38	0.39	0.39	0.39	0.39	0.39	0.39	0.39
MPONEN 2∠3) xTi rz=1)	y (lom)	0.51	0.51	0.51	0.55	0.53	0.52	0.51	0.51	0.51	0.51	0.51	0.51
MAIN COMPONENT Mn1/3Nb2/3)xTiy (x+v+z=1)	× (lom)	0.10	0.10	0.10	60.0	60'0	0.09	0.10	0.10	0.10	0.10	0.10	0.10
$Pb_{\alpha} [(N$	α (mol)	1.000	1.000	1.000	0.995	0.995	0.995	0.990	0.990	0.990	1.000	1.000	1.000
	SiO ₂ (wt%)						Č	70.0		.			L
	3 (wt%)	1	1	l	1	l	ſ	I	I	J.	0.20	0.30	0.50
ш	In ₂ O ₃ (wt%)	-	1)	ı	ı	l	•	-	0.02	ı	ŀ	1
ADDITIVE	Sc ₂ O ₃ (wt%)			1	1	ı	-	0.02	0.10	I	Î	I	1.
*	Ta ₂ O ₅ (wt%)		ļ	0.50	0.50	0.50	0.50	1	İ	ı	1	° I	ı
	$Al_2O_3 \mid Ga_2O_3 \mid Ta_2O_5 \mid Sc_2O_3 \mid (wt\%) \mid (wt\%) \mid (wt\%) \mid (wt\%) \mid$	0.02	0.10	ı	1	1	ı	j	ı	j.	.1	Į	ł
<u>.</u>	Al ₂ O ₃ (wt%)	1	1	1	1	1	1	ı	1	0.45	ı	1	1
SPECI-		49	50	51	52	53	54	55	56	57	58*	59*	*09